The compact callus induction of *Stylosanthes hamata* cv. Verano were conducted in order to obtain explant for gene transformation. The leaf, cotyledon and hypocotyl explants were cultured in MS media contained 0, 5, 10, 15 and 20 mg/l 2,4-D or NAA. The result demonstrated that the best medium for compact callus induction was MS medium supplemented with 5 mg/l 2,4-D in which it yield callus fresh weight of 0.26 g/explant. The leaf explant tended to yield more compact callus than those of cotyledon and hypocotyls explants. The shoot induction was determined using MS media supplemented of HA or kinetin at various concentration. The results revealed that the best media for shoot induction was MS medium supplemented with 15 mg/l BA. In this medium, the average of 9 shoots per callus piece was obtained when the callus explants were culture for 45 days. The root induction, however, was obtained at 40% when the regenerated shoots were cultured on MS medium contained 0.5 mg/l IBA.

The transformation of *S. hamata* cv Verano callus was optimized using two main systems, the particle bombardment and the *Agrobacterium*-mediated gene transformation. The particle bombardment was perform using the plasmid pGN contained *gus* as a reporter gene and *npt II* as a selectable marker gene and using particle bombardment device model PDS-1000/He. In case of *Agrobacterium*-mediated transformation, plasmid pCambia1301 contained *gus* reporter gene and *hpt* selectable marker gene was used. The results of particle bombardment procedure demonstrated that the helium gas pressure of 1,100 psi and the target distance of 6 cm yielded the highest number of blue spots (6.4 spots/callus). For *Agrobacterium*-mediated transformation, the 1:50 dilution of *Agrobacterium* suspension combined with 5 sec sonication-assisted wounding and co-cultivation period of 2 days yielded the highest number of blue spots of 4.0 spots per callus. The incorporation of transgenes into *S. hamata* genome was determined by Southern PCR hybridization and dot blot hybridization techniques using genomic DNA extracted from putative transform plants. The results confirmed the integration of the reporter gene and selectable marker gene into plant genome.